ICF-780L

SERVICE MANUAL

AEP Model
UK Model

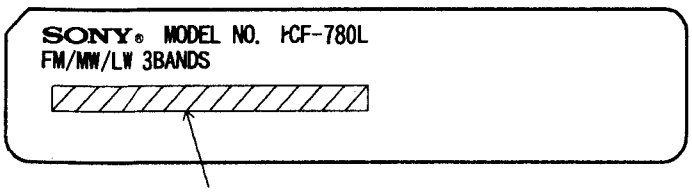
Photo : GRAY

SPECIFICATIONS

Frequency range	FM: 87.6 – 107.5 MHz MW: 531 – 1602 kHz LW: 153 – 255 kHz
Intermediate frequency	FM: 10.7 MHz AM: 455 kHz
Antennas	FM: Telescopic antenna MW/LW: Built-in ferrite bar antenna
Speaker	Approx. 10.2 cm ($4^1/_8$ inches) dia., 8 ohms
Power output	430 mW (at 10% harmonic distortion)
Output	Earphone jack (minijack)
Power requirements	With the supplied AC power cord: UK model : 240 V AC, 50 Hz AEP model : 220 V AC, 50 Hz With four R6 (size AA) batteries: 6 V DC
Battery life	Approx. 35 hours using Sony batteries SUM-3 (NS)
Dimensions	Approx. 255 × 129 × 62.6 mm (w/h/d) ($10^1/_8 \times 5^1/_8 \times 2^1/_2$ inches) incl. projecting parts and controls with carrying handle pushed in
Weight	Approx. 965 g (2 lb 2 oz) incl. batteries
Supplied accessory	AC power cord (1)

Design and specifications subject to change without notice.

MODEL IDENTIFICATION
— Model Number Portion —



- Carved on rear cabinet
  AEP model: AC220V ~ 50Hz 4W
- Model number label
  UK model: AC240V ~ 50Hz 4W

FM/MW/LW 3 BAND RECEIVER

SONY®

MICROFILM

SECTION 1
GENERAL

This section is extracted from instraction manual.

A Location of Controls

1 **Carrying handle**
2 **POWER switch (ON ⏏ / STANDBY ⏻)**
3 **🎧 (earphone) jack (left side)**
The sound through the speaker cannot be heard when an earphone is connected to the jack.
4 **AC IN (input) jack (left side)**
5 **Speaker**
6 **Battery compartment (bottom)**
7 **Dial scales**
8 **Telescopic antenna**
9 **TUNE (tuning) control**
10 **VOL (volume) control**
Turn clockwise to increase the volume.
11 **TONE control**
Turn clockwise to increase the treble.
Turn counterclockwise to decrease the treble.
12 **Band selector FM/MW/LW**
13 **TUNE (tuning) indicator**

Power Sources

B Batteries

Battery replacement

When the sound becomes weak or distorted, replace all the batteries with new ones.
Concerning the battery life, see "Specifications".

Note

If the unit is not to be used on batteries for a long period of time, remove them to avoid battery leakage and corrosion.

C House Current

D Radio Operation

1 Depress the POWER switch (⏏) to turn on the unit.
2 Select a desired band.
3 Tune in a desired station.
4 Adjust the volume.
5 Adjust the tone to your preference.
The TUNE indicator lights up when a station is tuned in.

To turn off the radio, press the POWER switch (⏻).

E To Improve Receiving Condition

FM

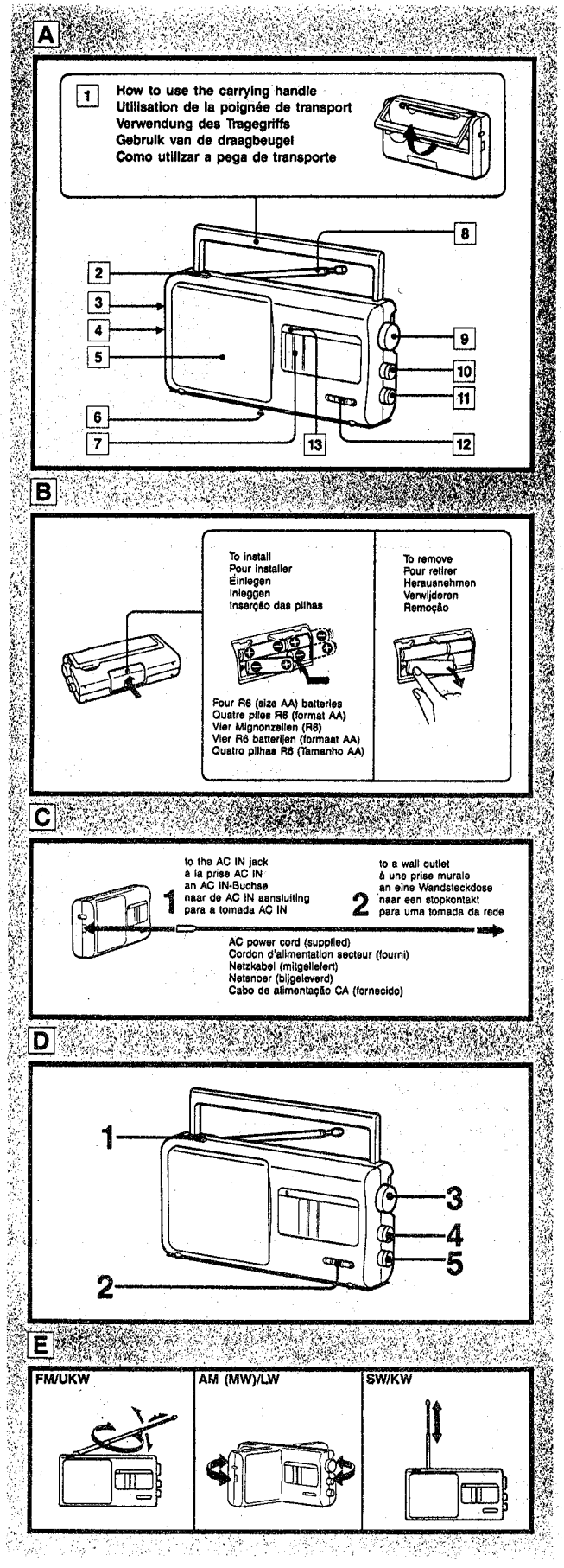
Extend the telescopic antenna and adjust its length, direction and angle for the best reception.

MW/LW

Since the reception is affected by the direction of the radio, rotate the unit horizontally for optimum reception.

Notes

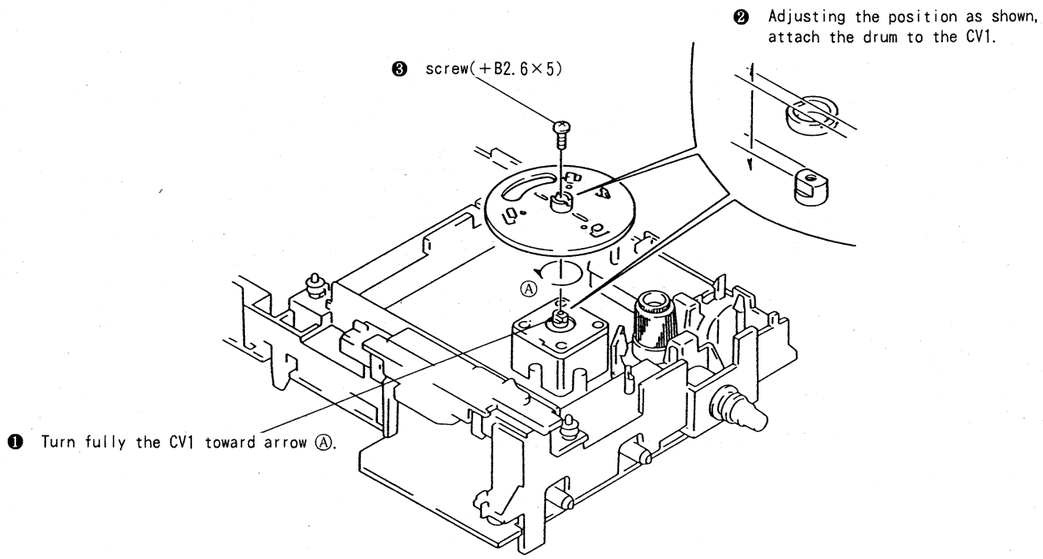
- In vehicles or in buildings, radio reception may be difficult or noisy. Try listening near a window.
- Keep the radio away from the metallic objects.



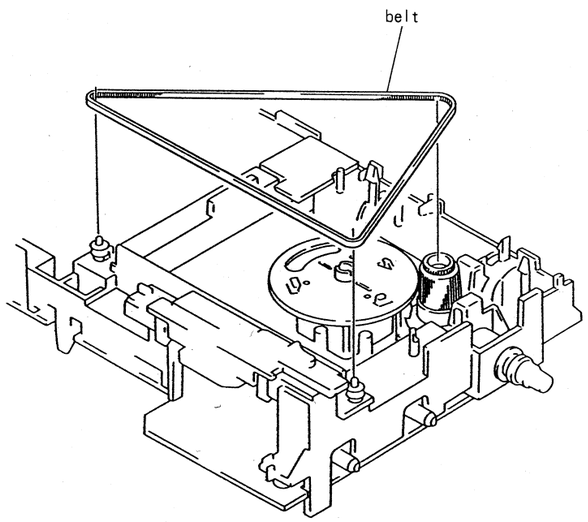
SECTION 2
DIAL POINTER FITTING

Note : Follow the dial pointer fitting procedure in the numerical over given.

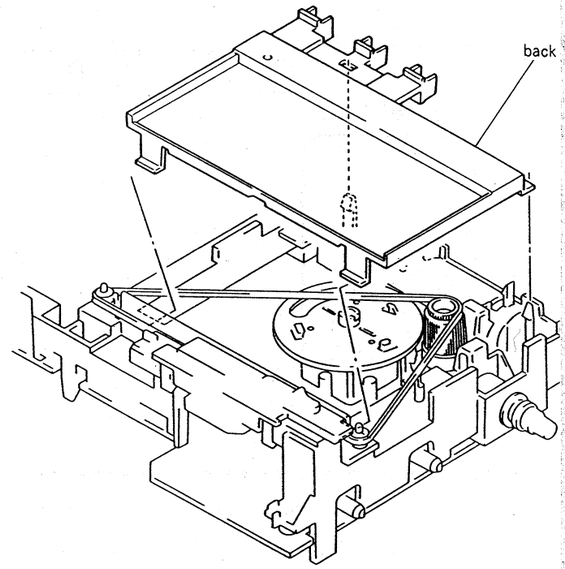
1. INSTALL DRUM



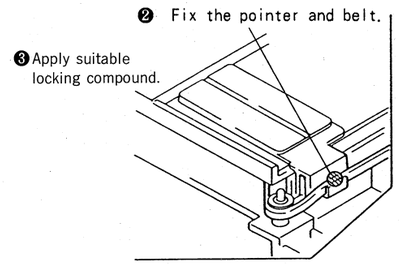
2. INSTALL BELT

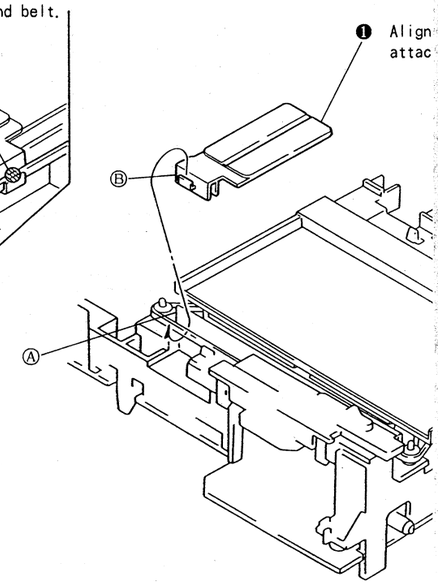


3. INSTALL BACK PLATE

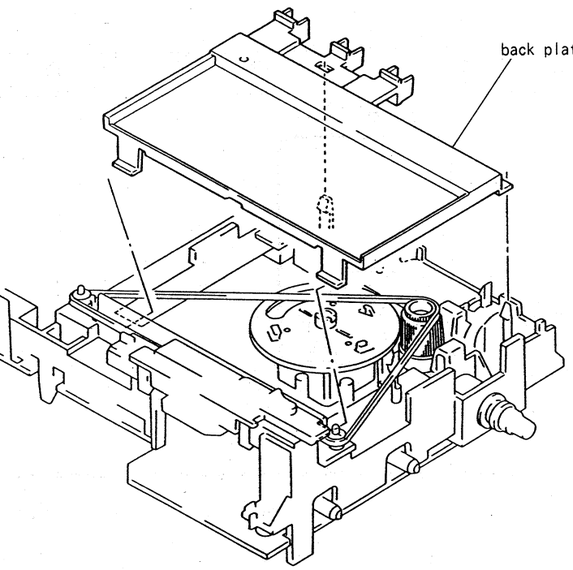


4. INSTALL DIAL POINTER



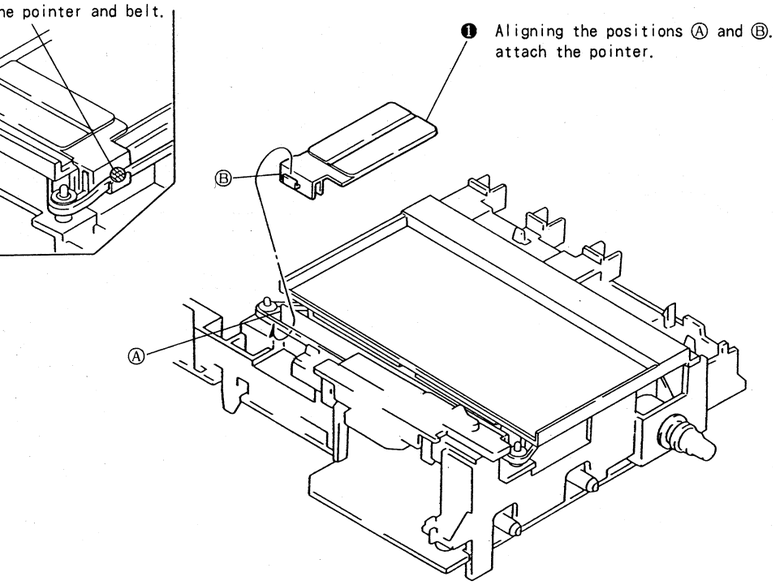


LL BACK PLATE



LL DIAL POINTER

he pointer and belt.

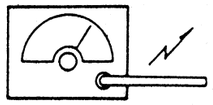


SECTION 3
ELECTRICAL ADJUSTMENT

MW/LW

BAND switch : MW/LW

AM RF signal generator



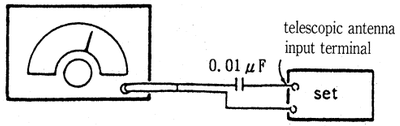
Put the lead wire antenna close to the set.

30% amplitude modulation by 400Hz signal output level:as low as possible.

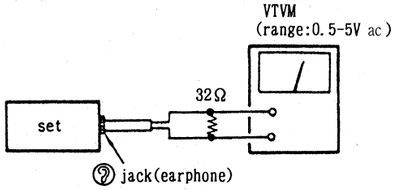
FM

BAND switch : FM

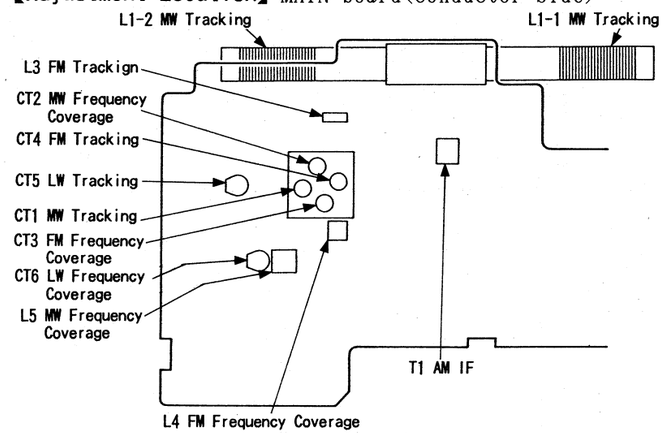
FM RF signal generator



±22.5kHz frequency deviation by 400Hz signal output level:as low as possible.



【Adjustment Location】 MAIN board(conductor side)



Note : LW adjustment should be made after making MW adjustments. (♯1)

- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

AM IF ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
T1	455kHz

MW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L5	520kHz
CT2	1,650kHz

MW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L1-1	620kHz
CT1	1,400kHz

♯1

LW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
CT6	145kHz

♯1

LW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L1-2	160kHz
CT5	240kHz

FM TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L3	87.35MHz
CT4	108.05MHz

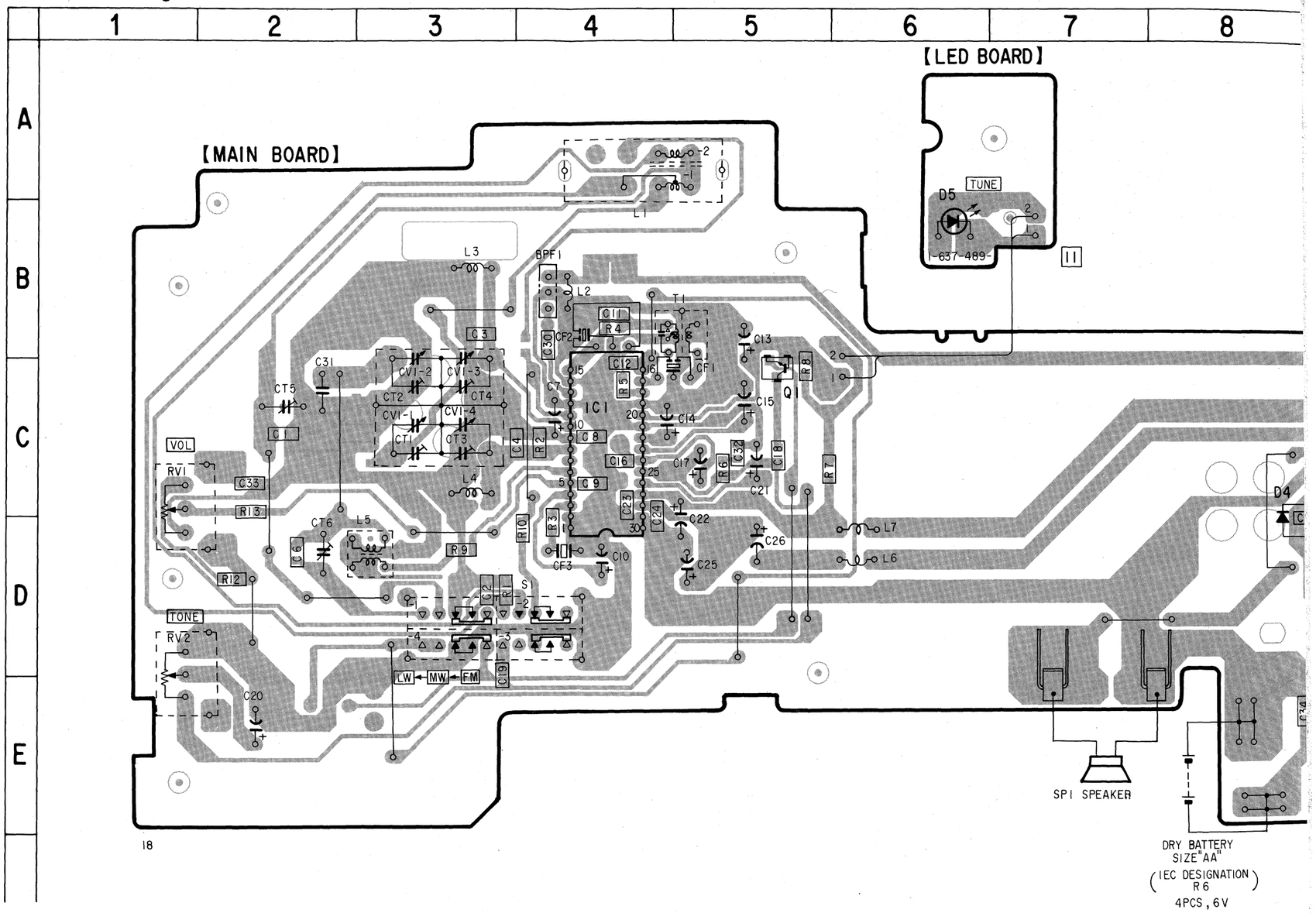
FM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L4	87.35MHz
CT3	108.05MHz

SECTION 4
DIAGRAMS

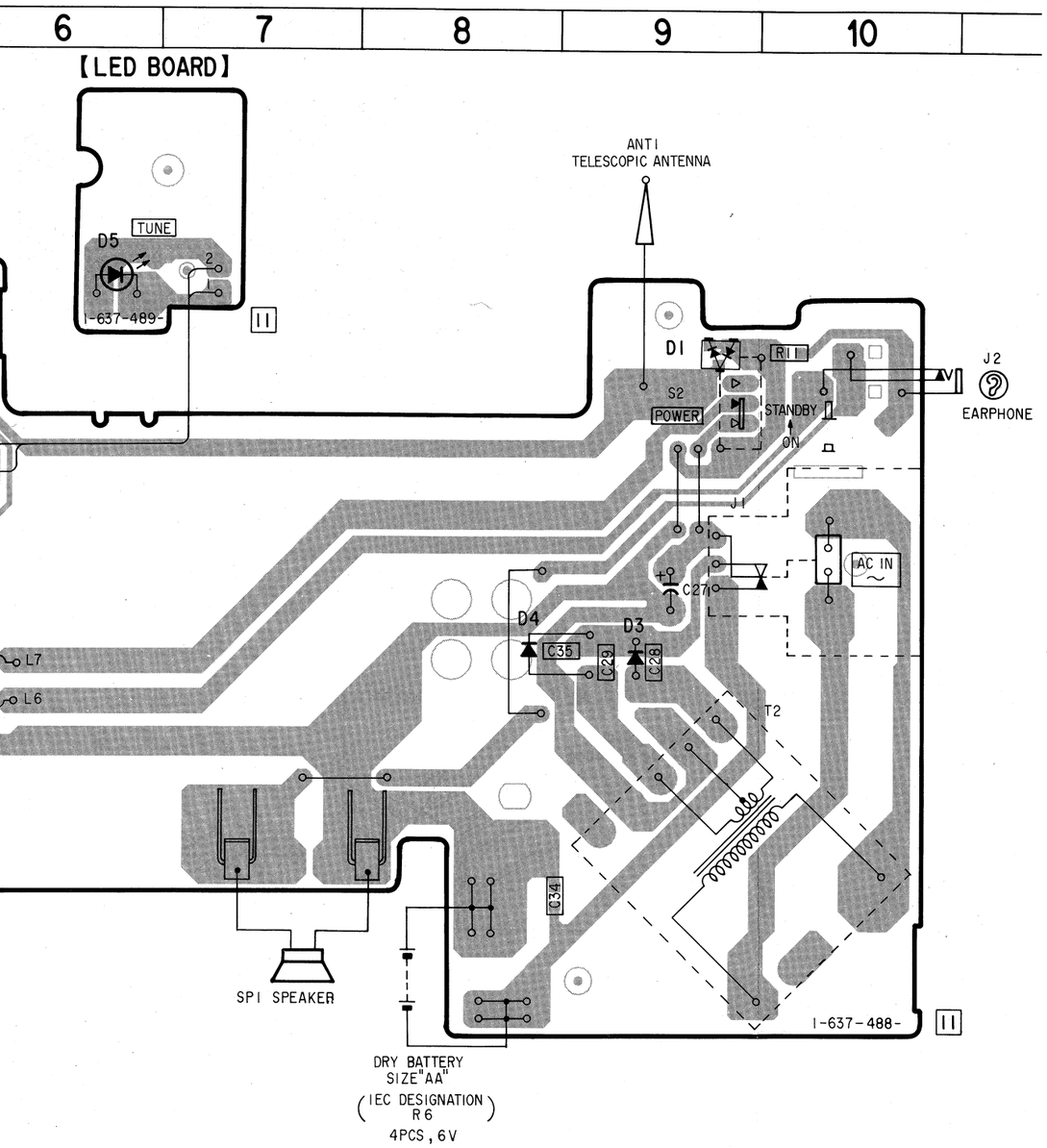
● Semiconductor Locations

Ref. No.	Location
D 1	B-9
D 3	D-9
D 4	D-8
D 5	B-6
IC 1	C-4
Q 1	C-5

4-1. Printed Wiring Boards

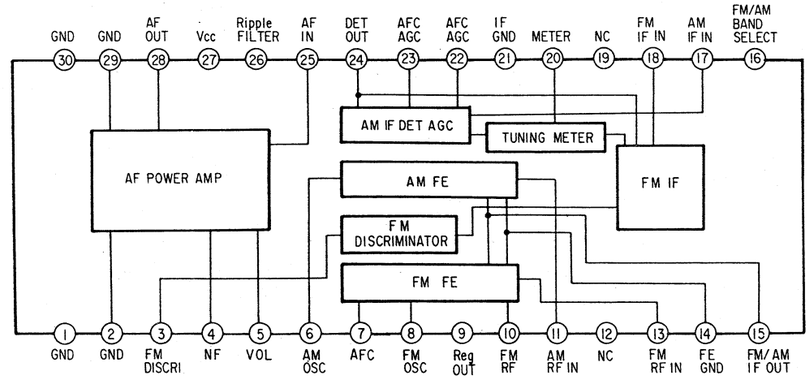


Note:
- o—— :parts extracted from the component side.



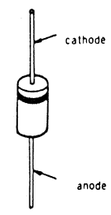
● IC Block Diagram

IC 1
CXA1019S

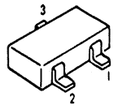


● Semiconductor Lead Layouts

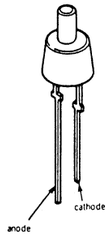
10E2



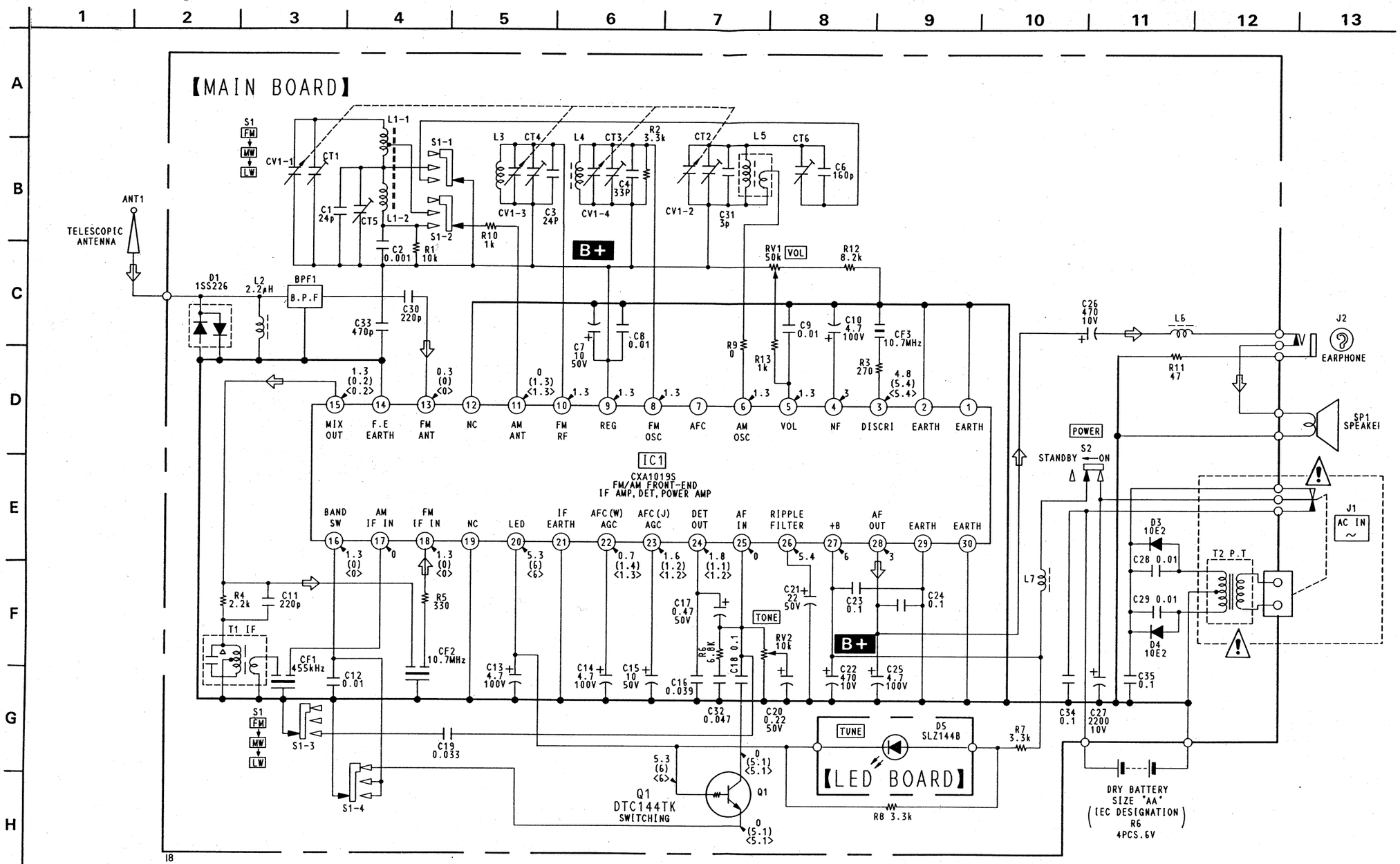
1SS226



SLZ144B



4-2. Schematic Diagram



Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- △ :internal component.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are cirtical for safety. Replace only with part number specified.

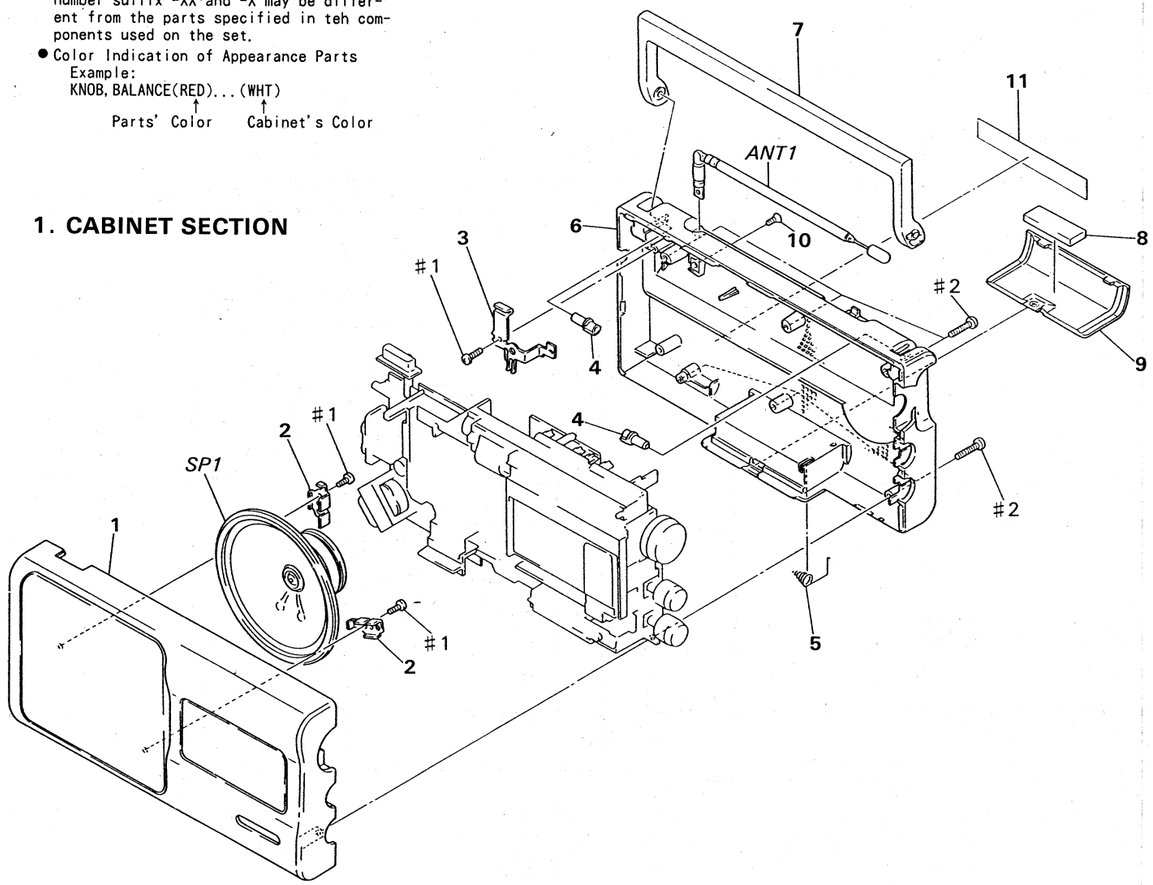
- Voltage is dc with respect to ground under no-signal(detuned) conditions.
  no mark:FM
  ( ):MW
  < >:LW
- Voltages are taken with a VOM(input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ :FM

SECTION 5
EXPLODED VIEWS

NOTE:
- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in teh components used on the set.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE(RED)...(WHT)
  ↑ Parts' Color ↑ Cabinet's Color
- Screw(#mark)list is given in the last of this parts list.

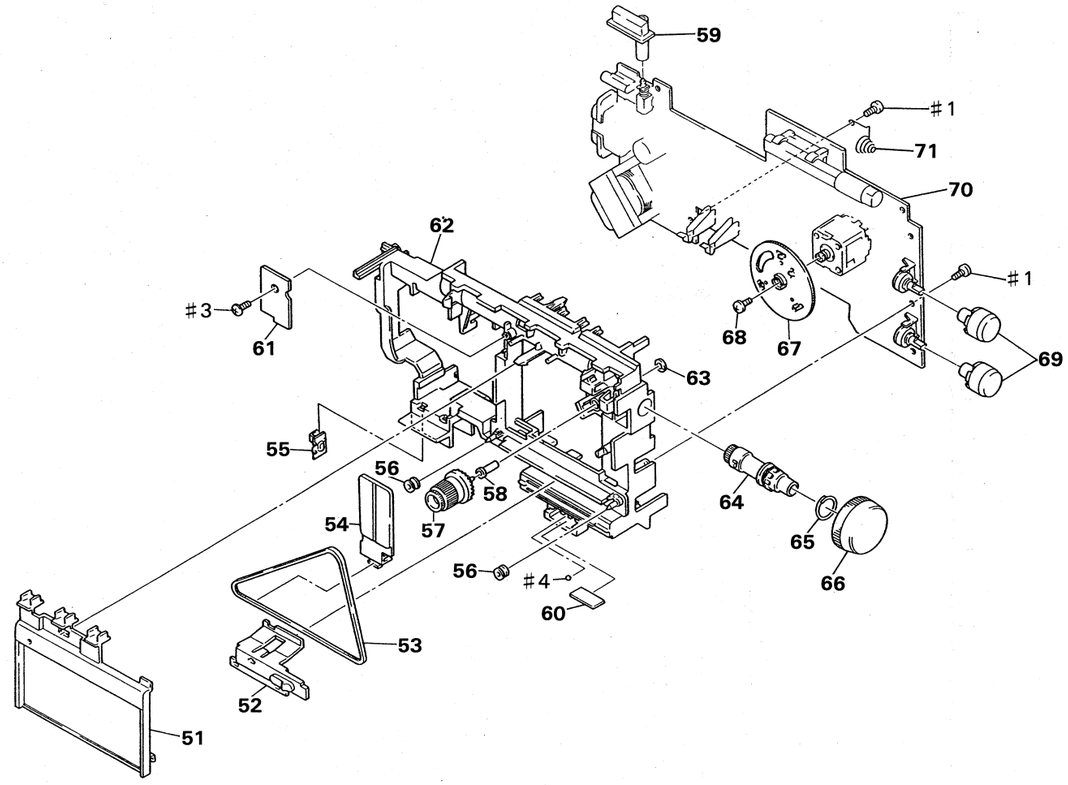
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

1. CABINET SECTION



Ref.No.	Part No.	Description	Remark
1	X-3362-621-1	CABINET (FRONT) ASSY (BLACK)・・(BLACK)	
1	X-3362-622-1	CABINET (FRONT) ASSY (WHITE)・・(WHITE:AEP)	
1	X-3362-623-1	CABINET (FRONT) ASSY (GRAY)・・・(GRAY:AEP)	
2	3-364-730-01	CLAW, SPEAKER	
3	3-363-360-01	SPRING, HANDLE	
4	3-363-372-01	SHAFT (HANDLE)	
5	3-363-363-01	SPRING, PLUS.MINUS	
6	3-364-728-61	CABINET (REAR) (NO.1) (BLACK)・・(BLACK)	
6	3-364-728-71	CABINET (REAR) (NO.1) (WHITE)・・・(WHITE:AEP)	
6	3-364-728-81	CABINET (REAR) (NO.1) (GRAY)・・(GRAY:AEP)	
7	3-363-379-01	HANDLE (BLACK)・・・(BLACK)	
7	3-363-379-11	HANDLE (WHITE)・・・(WHITE:AEP)	
7	3-363-379-21	HANDLE (GRAY)・・・・(GRAY:AEP)	
8	9-911-815-02	CUSHION	
9	3-363-392-01	LID, BATTERY CASE (BLACK)・・(BLACK)	
9	3-363-392-11	LID, BATTERY CASE (WHITE)・・(WHITE:AEP)	
9	3-363-392-21	LID, BATTERY CASE (GRAY)・・・(GRAY:AEP)	
10	3-364-994-11	SCREW (+K) (3X6), NYLOK	
11	* 3-364-727-01	LABEL, MODEL NUMBER・・・(UK)	
ANT1	1-501-362-11	ANTENNA, TELESCOPIC	
SP1	1-544-406-11	SPEAKER	

2. CHASSIS SECTION



Ref.No.	Part No.	Description	Remark
51	* 3-363-391-01	PLATE, BACK	
52	3-363-389-01	KNOB (B) (BLACK)・・・(BLACK)	
52	3-363-389-11	KNOB (B) (WHITE)・・・(WHITE:AEP)	
52	3-363-389-21	KNOB (B) (GRAY)・・・・(GRAY:AEP)	
53	3-363-369-01	BELT	
54	3-363-377-01	POINTER	
55	3-363-361-01	TERMINAL BOARD, BATTERY	
56	3-304-108-00	PULLEY	
57	3-363-373-01	GEAR, MIDWAY	
58	3-363-367-01	BEARING	
59	3-363-371-01	BUTTON (POWER)	
60	3-363-362-01	SPRING, LEAF	
61	* 1-637-489-11	PC BOARD, LED	
62	* 3-363-383-01	CHASSIS	
63	3-364-731-01	WASHER, POLY-SLIDER	
64	3-363-375-01	SHAFT (TUNING)	
65	3-363-365-01	RING	
66	3-363-374-01	KNOB (T) (BLACK)・・・(BLACK)	
66	3-363-374-11	KNOB (T) (WHITE)・・・(WHITE:AEP)	
66	3-363-374-21	KNOB (T) (GRAY)・・・・(GRAY:AEP)	
67	3-363-387-01	DRUM (A)	
68	3-364-941-11	SCREW (+B) (2.6X5), NYLOK	
69	3-363-393-01	KNOB (CONTROL) (BLACK)・・・(BLACK)	
69	3-363-393-11	KNOB (CONTROL) (WHITE)・・・(WHITE:AEP)	
69	3-363-393-21	KNOB (CONTROL) (GRAY)・・・・(GRAY:AEP)	
70	* A-3661-192-A	MOUNTED PCB (HAND), MAIN・・・(AEP)	
70	* A-3661-197-A	MOUNTED PCB (HAND), MAIN・・・(UK)	
71	3-363-364-01	SPRING, MINUS	

SECTION 6
ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS :
uF : μF

RESISTORS
- All resistors are in ohms.
- F:nonflammable

INDUCTOR :
uH : μH

SEMICONDUCTORS
In each case, u : μ, for example:
uA··· : μA···, uPA··· : μPA···,
uPC··· : μPC···, uPD···, μPD···

- Screw(#mark)list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
	* 1-637-489-11	LED BOARD			
		*********			
		< DIODE >			
D5	8-719-988-88	LED SLZ144B			
**********					
	* A-3661-192-A	MAIN BOARD (HAND),COMPLETE...(AEP)			
	* A-3661-197-A	MAIN BOARD (HAND),COMPLETE...(UK)			
		**********			
	1-568-277-11	SOCKET, CONNECTOR 2P			
	3-363-359-01	PLATE, CONTACT, SPEAKER			
	* 3-364-726-01	PLATE (B), SHIELD			
	* 3-364-732-01	PLATE (A), SHIELD			
BPF1	1-236-022-11	FILTER, BAND PASS			
		< CAPACITOR >			
C1	1-163-102-00	CERAMIC CHIP	24PF	5% 50V	
C2	1-163-009-11	CERAMIC CHIP	0.001uF	10% 50V	
C3	1-163-102-00	CERAMIC CHIP	24PF	5% 50V	
C4	1-163-105-00	CERAMIC CHIP	33PF	5% 50V	
C6	1-163-122-00	CERAMIC CHIP	160PF	5% 50V	
C7	1-123-875-11	ELECT	10uF	20% 50V	
C8	1-164-232-11	CERAMIC CHIP	0.01uF	50V	
C9	1-164-232-11	CERAMIC CHIP	0.01uF	50V	
C10	1-124-927-11	ELECT	4.7uF	20% 100V	
C11	1-163-125-00	CERAMIC CHIP	220PF	5% 50V	
C12	1-164-232-11	CERAMIC CHIP	0.01uF	50V	
C13	1-124-927-11	ELECT	4.7uF	20% 100V	
C14	1-124-927-11	ELECT	4.7uF	20% 100V	
C15	1-123-875-11	ELECT	10uF	20% 50V	
C16	1-162-587-11	CERAMIC CHIP	0.039uF	10% 25V	
C17	1-124-902-00	ELECT	0.47uF	20% 50V	
C18	1-164-004-11	CERAMIC CHIP	0.1uF	10% 25V	
C19	1-163-989-11	CERAMIC CHIP	0.033uF	10% 25V	
C20	1-124-464-11	ELECT	0.22uF	20% 50V	
C21	1-126-233-11	ELECT	22uF	20% 50V	
C22	1-124-472-11	ELECT	470uF	20% 10V	
C23	1-164-004-11	CERAMIC CHIP	0.1uF	10% 25V	
C24	1-164-004-11	CERAMIC CHIP	0.1uF	10% 25V	
C25	1-124-927-11	ELECT	4.7uF	20% 100V	
C26	1-124-472-11	ELECT	470uF	20% 10V	
C27	1-126-927-11	ELECT	2200uF	20% 10V	
C28	1-164-232-11	CERAMIC CHIP	0.01uF	50V	
C29	1-164-232-11	CERAMIC CHIP	0.01uF	50V	
C30	1-163-125-00	CERAMIC CHIP	220PF	5% 50V	
C31	1-102-936-00	CERAMIC	3.0PF	+-0.25PF 50V	
C32	1-163-809-11	CERAMIC CHIP	0.047uF	10% 25V	
C33	1-163-005-11	CERAMIC CHIP	470PF	10% 50V	
C34	1-164-004-11	CERAMIC CHIP	0.1uF	10% 25V	
C35	1-164-004-11	CERAMIC CHIP	0.1uF	10% 25V	
		< FILTER >			
CF1	1-578-677-11	FILTER, CRYSTAL			
CF2	1-567-166-00	FILTER, CERAMIC			
CF3	1-567-166-00	FILTER, CERAMIC			
		< TRIMMER >			
CT1-4 CV1	1-151-631-11	CAP, VARIABLE			
CT5	1-141-355-21	CAP, VAR, TRIMMER			
CT6	1-141-355-21	CAP, VAR, TRIMMER			

MAIN

Ref. No.	Part No.	Description	Remark
		< DIODE >	
D1	8-719-800-76	DIODE 1SS226	
D3	8-719-200-02	DIODE 10E2	
D4	8-719-200-02	DIODE 10E2	
		< IC >	
IC1	8-752-055-05	IC CXA1019S	
		< JACK >	
J1	⚠ 1-526-838-11	INLET, AC 2P (AC IN)	
J2	1-563-836-21	JACK (EARPHONE)	
		< COIL >	
L1	1-402-529-11	ANTENNA, FERRITE-ROD (LW/MW)	
L2	1-410-501-11	INDUCTOR 2.2uH	
L3	* 1-422-342-11	COIL, AIR-CORE	
L4	1-460-135-11	COIL (WITH CORE) (RF)	
L5	1-406-028-00	COIL, OSC (MW)	
L6	1-410-294-11	INDUCTOR, MICRO	
L7	1-410-294-11	INDUCTOR, MICRO	
		< TRANSISTOR >	
Q1	8-729-903-30	TRANSISTOR DTC144TK	
		< RESISTOR >	
R1	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R2	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R3	1-216-035-00	METAL CHIP 270 5% 1/10W	
R4	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R5	1-216-037-00	METAL CHIP 330 5% 1/10W	
R6	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R7	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R8	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R9	1-216-296-00	METAL CHIP 0 5% 1/8W	
R10	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R11	1-216-017-00	METAL CHIP 47 5% 1/10W	
R12	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	
R13	1-216-049-00	METAL CHIP 1K 5% 1/10W	
		< VARIABLE RESISTOR >	
RV1	1-241-362-11	RES, VAR, CARBON 50K (VOL)	
RV2	1-241-361-11	RES, VAR, CARBON 10K (TONE)	

Ref. No.	Part No.	Description	Remark
		< SWITCH >	
S1	1-571-171-11	SWITCH, SLIDE (BAND)	
S2	1-571-042-11	SWITCH, PUSH (1 KEY) (POWER)	
		< TRANSFORMER >	
T1	1-404-341-00	TRANSFORMER, IF	
T2	⚠ 1-450-324-11	TRANSFORMER, POWER··· (AEP)	
T2	⚠ 1-450-325-11	TRANSFORMER, POWER··· (UK)	
		**********	
		MISCELLANEOUS	
		**********	
ANT1	1-501-362-11	ANTENNA, TELESCOPIC	
SP1	1-544-406-11	SPEAKER	
		**********	
		ACCESSORY & PACKING MATERIAL	
		**********	
	⚠ 1-555-234-00	CORD, POWER··· (AEP)	
	⚠ 1-558-032-11	CORD, POWER··· (UK)	
	* 3-364-706-01	CUSHION (R)	
	* 3-364-721-01	CUSHION (L)	
	* 3-364-723-01	INDIVIDUAL CARTON	
	3-752-572-11	MANUAL, INSTRUCTION (ENGLISH,FRENCH,GERMAN,DUTCH,PORTUGUESE)	
	3-898-032-11	SHEET, PROTECTION	
		**********	
		SCREW	
		*****	
#1	7-685-647-79	SCREW +BTP 3X10 TYPE2 N-S	
#2	7-685-651-79	SCREW +BTP 3X20 TYPE2 N-S	
#3	7-685-133-19	SCREW +BTP 2.6X6 TYPE2 N-S	
#4	7-671-112-11	BALL, STEEL	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

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